ROCKY FLATS PLANT - ENVIRONMENTAL RESTORATION PROGRAM

FY92 REPORT TO CONGRESS-PROGRAM ACCOMPLISHMENTS

SUMMARY THROUGH JANUARY 1993

The Environmental Restoration (ER) Program was begun at the Rocky Flats Plant (RFP) in 1986 and has grown into a $69,183,000 per year (FY92) program with more growth anticipated for the future. The legal framework which establishes the scope and schedule for projects in the ER Program is the Interagency Agreement (IAG) which was executed by DOE, EPA and the Colorado Department of Health (CDH) on January 22, 1991.

To date (January 1993), all IAG milestones have been met. From the inception of the program, 89 IAG milestones have been met, 24 in FY92. Sixty-eight of these were met on the original IAG schedule date and 21 were met on extension dates approved by the regulatory agencies. Several milestones in outyears are in jeopardy as a result of scope changes and funding problems in FY92.

Interim remedial action (IRA) facilities for Operable Units (OUs) 1 and 2 have been designed, constructed and put into operation. The OU 1 IRA has collected and treated over 800,000 gallons of ground water from the 881 Hillside, and the OU 2 IRA has collected, treated and discharged over 11 million gallons of surface water from the Walnut Creek drainage. The conceptual design of a second IRA for OU 2, which will employ vacuum-enhanced vapor extraction technology to extract volatile organics from vadose-zone soils, has been approved by the regulatory agencies and is currently undergoing detailed design.

Remedial investigation (RI) field work for OUs 1 and 2 is complete, and the 14-volume draft RI report for OU1 was delivered to EPA and CDH. RI field work is underway for OUs 3, 4, 5, 6 and 7, and final RI work plans for OUs 8 through 15 have been completed and are either approved or undergoing review by DOE and the regulatory agencies. An Optimal Interim Remedial Action Plan (O/IRAP), which will combine part the field work for OUs 8, 9, 10, 12, 13 and 14, was developed to provide for the most effective and efficient use of available resources. The final No Further Action Justification Document for OU16 is at the regulatory agencies for review.

The Solar Ponds Pondcrete Project has recently been reorganized to strengthen its project management and coordination of technical activities. To date, the Pondcrete Project has shipped over 9,000 blocks of pondcrete to NTS, completed construction of three 18,000 gallon/day evaporators, completed construction of three 500,000 gallon surge tanks for collection of interceptor trench water, and emptied pond 207A.

In the past six months, several enhancements have been implemented to correct identified deficiencies in the ER sample management process and in the Rocky Flats Environmental Data System (RFEDS). Sample management staff has been enhanced, and the pool of qualified laboratories for radionuclides analysis has been increased by four. These efforts have resulted in an increase in laboratory capacity, a decrease in sample backlog, and, in the case of one laboratory, a decrease in lab turn-around time from 120-180 days to 61-75 days.

A comprehensive groundwater monitoring program began at RFP in 1986. By the end of 1992, 430 monitoring wells were being routinely sampled quarterly. In December 1992, DOE presented a proposal to EPA and CDH for a 3-phase well evaluation program. This proposal would allow the discontinuance of routine monitoring at certain wells which are providing no new data, thereby conserving funds for new wells entering the program from OU characterization activities.

OPERABLE UNIT (OU) ACCOMPLISHMENTS

OU 1 - 881 HILLSIDE

Assessment Phase 1 and phase 2 RIs for OU1 completed in 1987 indicated the presence of organics in the soils and ground water of the 881 Hillside and provided the basis of the decision for an interim remedial action (IRA) at OU1. Field work for a phase 3 RI, which will provide the data for the final remedial action decision, was begun in August 1991 and completed in January 1992 . This RI implemented the detailed work plan approved by EPA and CDH. In the OU1 phase 3 RI, 56 boreholes and 39 wells were drilled, and 23 of the wells were completed as monitoring wells. 46 water samples, 280 soil samples and 85 sediment samples were collected and analyzed, and 46 geotechnical samples were tested. The 14-volume draft Remedial Investigation (RI) report including the Baseline Risk Assessment was completed and submitted to the regulatory agencies on October 28, 1992, the extended IAG milestone date. The feasibility study (FS) for OU1 is underway.

Interim Remedial Action The requirements for an OU1 IRA were generated from the phase 2 RI. All IAG milestones for the design, construction and startup of the IRA UV-Peroxide treatment facility and french drain ground water collection system were completed on schedule. Construction of the treatment building, installation of processing equipment, construction of influent and effluent storage tanks, and design of the french drain were completed in FY91. Construction of the french drain and installation of 11 monitoring wells were completed in the second quarter of FY92. The system began operation in May 1992 and has collected and treated over 800,000 gallons of water to date and has released over 700,000 gallons of treated water to the South Interceptor ditch. Revegetation of areas on the 881 Hillside disturbed by the construction activities is complete.

OU 2 - 903 PAD, MOUND AND TRENCHES

Assessment A phase 1 RI of OU2 was completed in 1986, and the alluvial portion of a phase 2 RI, which will provide data for the final remediation decision was begun in September 1991 and completed in November 1992. A proposed schedule for the bedrock portion of the RI is currently in review at the regulatory agencies. In the alluvial portion of the RI, 48 boreholes were drilled, 111 wells were drilled and completed as monitoring wells, and 5 surficial soil trenches and 20 surficial test pits were completed. 135 water samples and 625 soil samples were collected and analyzed.

Interim Remedial Action The single IRA originally planned for OU2 was divided into 2 IRAs in FY90 as a result of public review of the plans. A surface water treatment facility for the Walnut Creek drainage was mandated, and a vapor extraction system for the removal of organics from soils was planned.

The OU2 South Walnut Creek Surface Water IM/IRA Decision Document was approved by EPA and CDH in May 1991. Phase 1 of this project includes collection, storage and treatment of surface water for removal of organics using granular activated carbon (GAC). Phase 1 operation began in May 1991. Phase 2 of this IRA, which added a radionuclides removal system, was completed in April 1992. To date, the phase 1 and phase 2 systems have collected, treated and discharged over 11 million gallons of surface water.

The concept for a subsurface vapor extraction IRA for OU 2 has been approved by EPA and CDH. The pilot test plan for the first stage of this project was delivered to the regulatory agencies on October 29, 1992, the IAG milestone date. This system will employ *in situ* vacuum-enhanced vapor extraction to treat soils in the vadose zone in OU2 IHSSs for volatile organics.

OU 3 - Offsite Areas

The Historical Information and Preliminary Health Risk Assessment Report and Past Remedy Report for OU3 were completed and approved by DOE and the regulatory agencies in FY91. The RI Work Plan was approved by EPA and CDH early FY92, and RI field work began in May 1992. To date, 250 of 290 planned soil samples, all 230 sediment samples, 110 of 124 water samples, and all 180 biota samples have been collected and sent to analytical laboratories for analysis.

OU 4 - Solar Ponds

Assessment The final RFI/RI Work Plan for OU4 was submitted to the regulatory agencies on November 26, 1991, the IAG milestone date, and conditional approval was received in May 1992. The RFI/RI subcontract to implement the work plan was awarded, mobilization began in November, 1992, and field work began in December. To date, the following OU4 field work has been accomplished:

- FIDLER survey in the Buffer Zone is 95 percent complete.

- Ground Penetrating Radar and Radiation Surveys completed in Pond 207A.

- Two 12-15 foot boreholes have been completed inside the PA and soil samples collected and sent to analytical labs.

- Borehole locations in the Buffer Zone have been marked and cleared by EG&G Construction Management.

Remediation One result of the focus of attention on the OU4 remediation (Pondcrete) activities has been the complete reorganization and expansion of the Pondcrete Project Office. The new organization is now staffed with a sufficient number of dedicated personnel to manage all the critical aspects of the project. A listing of the more significant accomplishments of the Pondcrete Project since FY90 includes the following:

- Shipped 9,376 pondcrete blocks to NTS for disposal.

- H-NUS contracted on 2/28/91 for solidification of pondsludge.

- Completed repackaging of deteriorated pondcrete and saltcrete blocks.

- Waste characterization completed for pondsludge, pondcrete and saltcrete.

- Treatability studies complete for pondsludge - incorporated dewatering of 207A and B series pond for waste minimization which reduced processed waste volumes significantly.

- Waste analysis plan for 207C and clarifier completed and submitted to the Nevada Test Site for review. Process Control Plan developed incorporating process controls as the primary demonstration of waste acceptability to the waste acceptance criteria and statistically based sampling to validate the effectiveness of the process controls.

- RFP Waste Certification Plan formulated and is in final review.

- The design, procurement and assembly of the process train for the first waste stream, 207C and Clarifier is 85% complete.

- Completed a request for change to interim status to incorporate the processing of pondsludge into the RFP RCRA operating permit.

- Completed construction of three 18,000 gallon per day evaporators in Building 910. Testing is in progress.

- Completed construction of three 500,000 gallon modular tanks to function as surge tanks in collecting Interceptor Trench Water at a rate of 4 million gallon per year.

- IM/IRA for the construction and operation of the Building 910 evaporator approved.

- Process Control Plans and supporting operating procedures for the Building 910 evaporators completed and submitted for review.

- SARS for the pondsludge processing, Building 910 and mixed waste storage on the 750 and 904 pads have been completed and submitted for DOE review.

- 207A pond has been emptied.

OU 5 - Woman Creek

The draft and final RFI/RI Work Plans for OU5 were completed on the IAG schedule dates, and the RI field work began in August 92. Two Technical Memoranda further defining requirements of the work plan have been approved by the regulatory agencies and implemented. Three of the planned 14 monitoring wells have been completed, and 12 of the planned 48 surface water and pond water samples have been collected. Eight borings have been completed, and all of the 13 stream and pond sediment samples have been taken and sent to laboratories for analysis. The scheduled magnetic and electromagnetic geophysical surveys at IHSSs 115 and 133 have been completed. A High Purity Germanium radiation survey and environmental evaluation field work are underway.

OU 6 - Walnut Creek

The draft and final RFI/RI Work Plans for OU6 were completed on the IAG schedule dates, and the RI field work began in September 1992. To date, 111 of 155 surface soil samples, all 52 surface water samples, and all 50 pond sediment samples have been taken; 48 of 105 borings have been completed and sampled; 7 monitoring wells have been installed; and all geophysical surveys have been completed.

OU 7 - Present Land Fill

The draft and final RFI/RI Work Plans for OU7 were completed on the IAG schedule dates, and the draft human health risk assessment and two technical memoranda (Exposure Assessment and Modeling) were completed in December, 1992. Mobilization for the fieldwork began in September, and field work began in October, 1992. Environmental Evaluation surveys were completed in November, soil gas and surficial soil sampling in IHSS 203 was completed, and cone penetrometer drilling in IHSS 114 was begun in December. Through December 20, 1992, 250 soil samples have been collected, and 50 soil gas samples have been collected and analyzed.

OUs 8 Through 15

The draft and final RFI/RI work plans (IAG milestones) for these OUs have been completed. An Optimal Interim Remedial Action Plan (O/IRAP), which will combine part the field work for OUs 8, 9, 10, 12, 13 and 14, was developed to provide for the most effective and efficient use of available resources. The plan will also provide a vehicle to obtain IAG schedule relief. The plan encompasses actions to safeguard the safety of the public and environment while invasive investigative field work within the RFP Industrial Area is deferred until safety and security considerations no longer impact the RI/FS process for the affected OUs. The current environment presents an excellent opportunity to link the RI/FS process with Transition and the future disposition of RFP.

OU 16 - Low Priority Sites

The draft and final No Further Action Justification documents were delivered to the regulatory agencies on their IAG milestone dates. The document provides technical justification for no additional investigation or remediation at 7 RFP individual hazardous substance sites (IHSSs).

SITEWIDE ACCOMPLISHMENTS

ER sitewide activities include tasks and projects that encompass a wide variety of plans, procedures, reports, studies, and other activities that apply to and support the assessment and remediation activities of the operable units. Some of these activities are required by the IAG, and others are required by RFP and/or DOE orders, policies and procedures. A listing of the more significant sitewide accomplishments is presented below.

Environmental Sample Management In the past six months, several enhancements have been implemented to correct identified deficiencies in the ER sample management process and in the Rocky Flats Environmental Data System (RFEDS). Sample management staff has been increased, and the pool of qualified laboratories for radionuclides analysis has been increased by four. These efforts have resulted in an increase in laboratory capacity, a decrease in sample backlog, and, in the case of one laboratory, a decrease in lab turn-around time from 120-180 days to 61-75 days. Cost management of the large ER sample analysis budget ($22.9M in FY93) has also been addressed. ER staff is working with EG&G Procurement, Accounting and Central Planning to develop a customized system for handling analysis accruals and invoices so that accurate, up-to-date charges are assessed against ER projects for sample analysis.

Groundwater Monitoring A comprehensive groundwater monitoring program began at RFP in 1986 when 70 new wells were added to the existing 30 wells bringing the total to 100 monitoring wells. In 1987, 67 wells were added, and in 1989 160 wells were added bringing the total to 260 wells after some older wells were abandoned. In 1991, 27 new wells and in 1992, 150 new wells from the OUs 1 and 2 drilling programs were added bringing the total to 430 wells. All wells are sampled quarterly. In December, 1992, EG&G and DOE presented a

proposal to EPA and CDH for a 3-phase well evaluation program. This proposal would allow the discontinuance of routine monitoring at certain wells which are providing no new data, thereby conserving funds for new wells entering the program from OU characterization activities.

Administrative Record CERCLA and the IAG require that an Administrative Record (AR) be established for the ER Program. The AR is required to document the basis for response selection and adequacy of response selection for the cleanup of Individual Hazardous Substance Sites (IHSSs) as well as to serve as a vehicle for public participation in the selection of the response action.

Preliminary scheduling and organization of the AR started in 1990. The first AR index was compiled in December 1990, and a total of seven indexes have been delivered to the regulatory agencies since 1990. Microfiche reader/printers were purchased and placed in the four public repositories for public use in viewing the AR microfiche in November 1991, and the first set of microfiche were installed in the public repositories in February of 1992.

A total of 1,907 documents are currently included in the AR (90,634 pages processed). The number of documents processed for inclusion in the AR during the 1992 fiscal year totaled 1,567 (75,324 pages processed).

The Administrative Record Screening and Processing Procedure was completed and approved by the ER Associate General Manager December 4, 1992. The procedure is now ready for controlled distribution.

Community Relations All milestones associated with the ER Community Relations Plan (CRP) have been completed on schedule. The CRP was approved by EPA and CDH and issued in December 1991. During FY92, the following activities were accomplished:

- Thirteen ***Environmental Restoration Update*** newsletters have been issued to the public.
- Eight quarterly public information meetings, as required by the IAG, have been held.
- A technical Review Group (TRG) was organized in June 1991. The TRG has met monthly since that time to provide public input on draft work plans and other documents.
- Eight 60-day public comment periods have been held on IAG-required documents. Each comment period included a public information meeting and a public comment meeting.
- Monthly coordination meetings have been held with EPA and CDH since January 1990.
- All required documents have been placed in Rocky Flats public Reading Rooms and five other repositories.
- As required by the CRP, numerous tours, presentations and briefings have been

conducted, nearly 25 fact sheets have been produced, and numerous citizen questions have been answered.

Discharge Limits for Radionuclides Work Plan This plan addresses the monitoring and control of radionuclide concentrations in discharge waters from RFP. The final plan was delivered to the regulatory agencies on September 16, 1991, the IAG milestone date.

Plan for Prevention of Contaminant Dispersion (PPCD) The PPCD establishes procedural requirements to mitigate potential hazards to persons located offsite as a result of contact with emissions resulting from intrusive RI activities at RFP. The final PPCD, an IAG milestone, was delivered to the regulatory agencies on July 22, 1991.

Sitewide Characterization Studies and Reports The following accomplishments have been achieved:

- A Background Geochemistry Plan and 1991 and 1992 Background Geochemistry Reports were completed.

- Deep seismic line was completed from three miles west of the mouth of Coal Creek Canyon to Jefferson County Airport to characterize structural setting at RFP. Shallow seismic data along Indiana Street to characterize subsurface boundary conditions and potential contaminant migration pathways was acquired. CSU thesis work for structural geology at RFP area which will provide cost effective structural characterization was supported.

- Completed sitewide Geologic Characterization drilling program. Completed 1991 Geological Characterization Report which describes the geologic framework at RFP and has been used extensively for OU characterization efforts.

- All 1986, 1987, 1989, 1991 and 1992 borehole data was digitized and edited and is now in final database format.

- Provided oversight and training for all core logging activities and core logging personnel at RFP.

- Completed surface mapping of geological units at RFP and surrounding area and issued final report. Compiling and verifying geohydrologic data underway and began work on sitewide groundwater model. OU2 aquifer testing was completed to support characterization of the local hydrology of this unit.

- Electronic equipment and transport vehicle for the in-situ gamma measurement program were procured and are in final testing and calibration prior to initial demonstration measurements.

- Spatial and vertical distribution of actinides in soils at RFP was determined and the fate and transport of plutonium in the soil environment was ascertained.

Decontamination Facilities Decontamination facilities must be provided to decontaminate equipment used in RI field work. Their primary purpose is to eliminate the transfer of contaminants from a contaminated borehole or well to a clean hole that could occur if drill bits were not decontaminated between use.

In FY91, an obsolete decontamination facility (decon pad) was replaced by an improved decon pad and designated as the 903A Decon Pad. In FY92, design was completed, and construction started on a decon pad inside the PA to support RI work in that area. Construction is scheduled for completion in December 1992.

Sitewide Health and Safety Program Plan (HSSP) The IAG-required Sitewide HSPP was completed in November 1990. The SWHSPP establishes the minimum requirements for compliance with worker health and safety. Each field activity conducted under the IAG is governed by Site-Specific Health and Safety Plan SSHSP prepared to be in compliance with the HSPP. Approximately 350 workers have been trained under the requirements of the HSPP.

Quality Assurance The IAG-required Quality Assurance Project Plan (QAPjP) was completed and approved by the regulatory agencies in 1991. The basic implementing administrative procedures were issued in August 1991. Approximately 25 broad scope Readiness Reviews and Surveillances and over 200 in-depth QA field inspections have been performed. Extensive QA training for field personnel has been held.

Historical Release Report (HRR) The HRR (an IAG milestone), which documents all contaminant spills and releases at RFP since inception of the plant) was prepared, and the final draft delivered to the regulatory agencies on June 3, 1992

Sitewide Treatability Studies The Sitewide Treatability Program, implemented to meet the requirements of Article XI of the IAG, is designed to identify candidate technologies for use in corrective actions/remedial actions at RFP. The primary purpose of the TSP is to expedite the screening of technologies and alternatives for the types of contaminants that appear to be generally present at RFP and are present at more than one OU. The final TSP, an IAG milestone, was delivered to the regulatory agents on June 3, 1991. An annual treatability study report was completed in FY91, and the FY92 annual report in draft form has been completed. To date, three test programs have been completed, one test is in progress, and soil samples for two test programs have been collected. Seven work plans for additional treatability studies have also been completed.

PROGRAM MANAGEMENT

The IAG which lays out the legal and regulatory framework for implementation of the ER Program at RFP was negotiated and signed on January 22, 1991. Because of added requirements for completing ER work, funding limitations and other issues, DOE has decided to approach the regulatory agencies to amend the schedules and milestones in the IAG. These negotiations are ongoing.

In late FY92 and the first quarter of FY93, the EG&G ERWM organization was significantly reorganized. ER was established as a separate organization with its own associate general manager commensurate with this organization's increasing importance and visibility at RFP. The structure of ER is evolving into an organization designed to address the significant technical, programmatic and regulatory issues facing the operable units and other ER projects.

The ER Program, along with ER Programs at other DOE facilities, has been designated a Major Systems Acquisition (MSA) resulting in the imposition of the project management requirements of DOE Order 4700.5. A Scope, Schedule and Cost Baseline for the MSA was completed in January 1992 and has undergone numerous reviews and audits by DOE. Because all the IAG requirements were not met by the Baseline (because of funding limitations), the Baseline was not validated. A revised baseline is currently being developed. Preparation of an EG&G ER Program Management Plan has begun.

All required DOE planning documents including ADSs, Five-Year Plan, Site Specific Plan and Roadmap have been delivered. All IAG Monthly Status Reports have been delivered to the regulatory agencies on schedule since January 1990. Detailed weekly program status reports are being prepared for DOE